

“Sustainable green, lean and collaborative construction industry practices – the myths, and the future normal ?”.

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NZIQS Conference 7-9 June 2023 Building Toward the Future- Transformation Growth and Sustainability  
Claudelands, Hamilton, NZ



# Introduction

- The aim of this session is to share the potential and benefits of collaborative sustainable lean and green practices – in relation to current industry practices and challenges - from the perspective of a sustainable design and construction practitioner, academic and researcher
- What are a few of the related current industry challenges we are all having to deal with ?
  - DBB silo work practices are still very common – adding in part to the continued fragmentation of this industry
  - With costs escalating for labour and materials - cost estimates the designer shares in good faith with the client, as the documentation progresses often vary wildly from the QS' estimates at the developed and detailed design documentation stages can result in reputational risk for both of the professionals, and confused /unhappy clients
  - Ever-present and increasing climate change - issues and impacts are requiring immediate and future design and construction adaptation thinking and action and not just the environmental impacts yet as Sustainability is comprised of 3 pillars Economic/Social and Environmental

# Traditional vs Collaborative approaches

So -what are the potential benefits of collaborative D&B (or D&C) work practices for the project, the project team, client(s) and stakeholders, compared with the more well known traditional DBB approach ?

- Integrated Design and Construction:

‘Improves communication and closer collaboration amongst a greater number of consultants and contractors from the very beginning of the design and construction process, including the client and shareholders, and promotes the creation of a shared vision for the project’.

‘ can mitigate the number of RFIs’.

- Traditional approach:

- Functional isolation of consultants;

- Little utilization of the collective energy of the project team;

- Basic parameters of the design are set early on by just a few, without necessarily having regard to the effects those decisions will /might have on other consultants and contractors involved at a later stage of the process;

- Lack or very little client and user/occupier involvement in the design process

# Why contractors might take on a collaborative approach /work practice

- It provides a one-stop-shop for clients/stakeholders– by taking responsibility for the design and construction – ie including all risk associated with the project – and this might also could mean the losses too.
- Ensures an early understanding and clearer sense of the clients', stakeholders and other project team members' project requirements.
- Brings the whole project team together around the project from the 'get go' – from the concept design stage draft – when the design can still be easily influenced .
- Integrates and resolves buildability and design issues well prior to when construction stages begin.
- Too often in this industry it becomes a blame game environment /process- where the contractors blames the designers, the designers blame the client or other consultants for example -and on it goes – lots of finger pointing – we all need and benefit from better /no blame working relationships – eg early inclusive collaborative work practices

A few myths- and conflicting ideas that are often heard floating about in our industry – and whether collaborative work practices might help diffuse them? -what are your thoughts and experiences ?– will check in with you near /at the end of today’s presentation- hold that thought !!

- “That sustainable design and construction (sdc) approach using and specifying environmentally friendly materials increases project costs by as much as 15-20% more than specifying and implementing traditional materials and construction methods” – is that true? or is there a yes but only if .....answer as well?-  
and “ Its all just green wash”; “there’s a green premium if take an sdc approach”.
- “That ECI (early contractor involvement) is always a beneficial approach for the project and the client and team? Or that there can be substantive disbenefits too? –
- “ That it’s always the designers fault that the details don’t work- and/or the documentation is incomplete or wrong” ? – could there be a reason for that eg its linked to a clients’ unwillingness to pay for full service ? or the clients/developers et al maybe in a hurry to just get the job started? Or could D&B approach diffuse this issue early in the process ?
- “That it’s too hard and too costly and too time consuming to recycle excess materials and /or divert reusable/recyclable construction waste from landfills ?

# LEAN –how it fits with collaboration and integrated design (D&B)

- Customer focus – meeting or exceeding customer /client requirements
- Continuous improvement including built-in quality, safety and practice improvements,
- Focussing on the whole ‘value stream’, and ‘flow’ of processes
- Elimination/mitigation of waste (materials and labour ), defects and overproduction
- Workplace organisation and standardisation
- Lean design principles and construction- focus on ‘added value- ‘ that is not just the reduction in project duration and reduced costs (and potentially increased profit for contractors) but also intrinsic-value-added-noted above and on slide 4–(one stop shop).
- Lean Tools- commonly used are : 5S’ ; Kaizen; Last Planner and 5Whys



# Waste –plastics in particular and recent circular economy research – part of the sustainable green approach

In NZ Waste Classes (1-4 ) levies are to increase in 2024 and - C&D waste (class 2) levy increase to \$60/tonne in 2024.

- Recent and current research being undertaken and published by a Unitec /Industry research partnership has focussed on construction plastic waste (Berry et al since 2021)-
- “ Plastics are typically light, versatile and cheap to buy”- a few reasons for their popularity and use in the construction industry.
- Commonly found plastics in the construction waste audits conducted at 4 initial construction sites and now others as well were/are:
- Polyethylene – water pipes , vapour barriers, cable insulation, packaging
- Polypropylene – sewage pipes, water pipes, membranes, shrinkwrap
- Polystyrene- cable insulation, foamed plastic, insulation
- Polyvinylchloride- tubing, roofing, windows, flooring, light fittings

Why is construction plastic waste not routinely segregated on site ?

-Space limitations on site; labour cost and interference with everyday operations,

BUT there is good news with increasing manufacturers -taking back their

excess and recyclable plastic materials and work continues to convince others too

# Thank you

Happy to discuss any thoughts experiences and ideas to create sustainable green ,lean and collaborative industry practices now and into a future normal

